

Remarks

Review and reconsideration of this application are respectfully requested.

Claims 2 and 9-12 have been canceled and new claims 27-31 have been added.

Claim Objections

1. Claim 29 is objected to under 37 CFR 1.75©, as being of improper dependent form for failing to further limit the subject matter of a previous claim. The examiner alleges that claim 29 recites the tubular bearing insert carrier is coated with zinc or brass and claim 23 recites the outer circumference surface of the insert is coated with zinc or brass, which is narrower than claim 29.

Response to Claim Rejections

1. In view of the above amendment wherein claim 29 has been canceled, the claim rejection can now be withdrawn.

Claim Rejection - 35 U.S.C. § 112

3. Claims 4-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 4, the claim recites the group consisting of polyamide and polyphthalamide, the examiner states, however, that polyphthalamide is not included in the limitations of claim 3.

In claim 23, the claim includes the limitations of the adhesion promoter in lines 6-7 and the limitation is further repeated in lines 12-13. It is unclear as to why this repetition is made. Furthermore, in claim 30, there exist a double inclusion in "a bearing member having an outer

bearing race". Also, in claim 31, the claim also repeats the recitation of the "adhesion promoter".

Response to the Claim Rejection - 35 U.S.C. § 112

3. Claim 4 has been amended to recite that the polymeric material is a "polyamide", and claim 5 has been amended to recite that the polymeric material is a "polyphthalamide".

Claim 23 has been amended to delete the duplicate phrase relating to the "adhesion promoter".

Claim 30 has been amended to delete the term "bearing" in line 2 thereof.

Claim 31 has been amended to delete reference to the adhesion promoter.

Applicant appreciates the examiner's scrutiny of the claims, and has amended claims 4, 5, 23, 30 and 31 for the purpose of overcoming the examiner's rejection of such claims. Accordingly, it is believed that the rejections under 35 U.S.C. 112 can now be withdrawn.

Claim Rejections - 35 U.S.C. § 103

5. Claims 1, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCutchan, Jr. (4,468,210) in view of Avery (1,560,524). The examiner alleges that McCutchan, Jr. discloses a pulley having a body (80), and a bearing insert carrier insert (86) forming a central hub which has inner and outer circumferential surfaces, and housing a bearing member (85), and the outer race of the bearing is circumferentially adjacent the inner circumferential surface of the bearing. The examiner also alleges that McCutchan, Jr. also discloses the coated section between the insert and the polymeric body to assist in the bonding of the polymeric body to the pulley. McCutchan, Jr. fails to disclose the coating comprises zinc that is fixedly adhered to the insert. Avery discloses a pulley (see fig. 1) comprising a polymeric

body (28) a metal part and a zinc alloy coating (20) between the polymeric body and the metal part such that the polymeric body is molded to the zinc alloy coating in order to achieve great friction co-action and reduce rust between the rubber material and the metallic body. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of McCutchan, Jr. so that the coating is zinc in view of Avery in order to achieve great friction co-action and reduce rust between the rubber material and the metallic body.

With respect to claim 22, the examiner alleges that McCutchan, Jr. discloses a knurled section (30).

6. Claims 1-5, 8, 13-14, 15-17 and 22 are rejected under 35 U.S.C. 102b) as being unpatentable over Speer (4,366,609) in view of Avery (1,560,524). The examiner alleges that Speer discloses an idler pulley comprising a moldable polymeric body (24), with a pulley receiving peripheral shaped surface (20), a tubular insert (12) manufactured from a rigid metal, the insert forming a central hub along the perpendicular axis of the pulley body, the hub having an inner circumferential surface and an outer circumferential surface. The surface of the insert is coated by being roughened or by sandblasting. Speer does not disclose that the coated surface is coated with brass or zinc. Avery discloses a pulley (see fig.1) comprising a polymeric body (28), a metal part and a zinc alloy coating (20) between the polymeric body and the metal part such that the polymeric body is molded to the zinc alloy coating in order to achieve great friction co-action and reduce rust between the rubber material and the metallic body. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Speer so that the coating is zinc in view of Avery in order to achieve great friction co-action and reduce rust between the rubber material and the metallic body.

With respect to claim 3, the examiner alleges that Speer discloses the pulley body is manufactured from a moldable polymeric material, which is phenolic resin.

With respect to claims 4-5, the examiner alleges that Speer discloses that the polymeric can be a polyamide (col. 2, lines 34-55).

With respect to claims 13-14, the examiner alleges that Speer discloses the metal coating (18). The metal is coated before being formed in an aluminum sleeve (46).

With respect to claims 15-17, the examiner alleges that Speer discloses the claimed invention (col. 2, lines 56-67).

With respect to claim 22, the examiner alleges that Speer clearly discloses the locking portion (26).

7. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery as applied to claim 1 above, and further in view of JP (02-202928). Speer fails to disclose the type of polyamide is nylon. It is well known in the art that nylon is an organic base in polyamide that produces high resistance to temperature and good resistant to abrasion. JP (02-202928) discloses that polyamides such as nylon 6, and nylon 12 are suitable because of their high melting point and highly crystalline structure. Therefore, it would have been obvious to one of ordinary skill in the art to further modify the body of Speer so as to use a polyamide consisting of the group including nylon 6 or nylon 12 in view of JP (02-202928) in order to produce high temperature resistance and good resistant to abrasion.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery as applied to claim 1, and further in view of FR (1,595,346). Speer discloses the use of high-density polyethylene (col. 2, lines 51-55), the use of fibrous glass (col. 2, lines 54-55, which is glass fiber, but fails to disclose an adhesion promoter is of a group consisting of talc or mica. FR (1,595,346) discloses that it is known in the art to use talc or mica as reinforcing filler in moldable plastics so as to increase strength and produce good abrasion. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use talc or mica as a

reinforcing agent in the moldable plastic of Speer as disclosed by FR (1,595,346 so as to increase strength and produce good abrasion.

9. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCutchan, Jr. in view of Avery as applied to claim 1 above, and further in view of Hoffman et al. (4,046,432). McCutchan, Jr. discloses the claimed invention except for the hub including means for locating the bearing member during assembly. Hoffman et al disclose a bearing member (23) fitted within a central hub, wherein the hub includes a locating means (37/47/57), which is a dent that is allowed to lock the rotational movement of the bearing, retaining relative axial movement and to facilitate proper alignment between the bearing in the hub. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the pulley of Speer so as to include a locating means in view of Hoffman et al in order to lock the rotational movement of the bearing, retaining axial movement and to facilitate proper alignment of the bearing in the hub.

10. Claim 23 as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery, Hoffman and McCutchan, Jr., and Arai (5,797,819). Speer discloses the claimed invention as discussed above, but fails to disclose the zinc coating. Avery discloses a pulley (see fig.1) comprising a polymeric body (28), a metal part and a zinc coating (20) between the polymeric body and the metal part such that the polymeric body is molded to the zinc alloy coating in order to achieve great friction co-action and reduce rust between the rubber material and the metallic body. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Speer so that the coating is zinc in view of Avery in order to achieve great friction co-action and reduce rust between the rubber material and the metallic body. In addition, Speer does not disclose a one or more bearing members locating means and a bearing member fitted in the hub. Hoffman discloses the bearing member locating means as discussed above in the rejection of claims 20-21. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the pulley of Speer so as to include a locating means in view of Hoffman et al in order to lock the rotational

movement of a bearing, retaining axial movement and to facilitate proper alignment of the bearing in the hub. In addition, Speer fails to disclose the bearing member, McCutchan, Jr. discloses the bearing member fitting in the hub as discussed above. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to fit a bearing member in the hub of Speer as disclosed in order to reduce friction. Furthermore, Speer fails to disclose the body containing silica. It is well known in the art that the inclusion of silica increases strength and wear resistance in order to increase strength without comprising the size and weight. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include silica to the body of the device of Speer in view of Arai in order to increase strength without comprising the size and weight

With respect to claim 28, Speer discloses the claimed invention.

With respect to claim 29, Avery discloses the claimed invention as discussed above.

With respect to claim 30, McCutchan, Jr., Avery, and Hoffman et al. disclose the bearing member as discussed above.

11. Claim 27, as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery, Hoffman and McCutchan, Jr. and Arai as applied to claim 23 above, and further in view of JP (02-202928). Speer fails to disclose that the type of polyamide is nylon. It is well known in the art that nylon is an organic base in polyamide that produces high resistance to temperature and good resistance to abrasion. JP (02-202928) discloses that polyamides such as nylon 6 and nylon 12 are suitable because of their high melting point and high crystalline structure. Therefore, it would have been obvious to one of ordinary skill in the art to further modify the body of Speer so as to use a polyamide consisting of the group including nylon 6 or nylon 12 in view of JP (02-202928) in order to produce high temperature resistance, and good resistance to abrasion.

12. Claim 31, as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery, Hoffman and McCutchan, Jr. and Arai as applied to claim 23 above, and further in view of FR (1,595,346). Speer discloses the use of high-density polyethylene; the use of fibrous glass, which is glass fiber. But fails to disclose that one of the modifier, filler, and reinforcing agent and adhesion promoter is of a group consisting of Talc or mica. FR (1,595,346) discloses that it is known in the art to use Talc or mica as reinforcing filler in moldable plastics so as to increase strength and produce good adhesion. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Talc or mica as reinforcing agent in the moldable plastic of Speer as disclosed by FR (1,595,346) so as to increase strength and produce good adhesion. The type of polyamide is nylon. It is well known in the art that nylon is an organic base in polyamide that produces high resistance to temperature and good resistance to abrasion. JP (02-202928) discloses that polyamides such as nylon 6 and nylon 12 are suitable because of their high melting point and high crystalline structure. Therefore, it would have been obvious to one of ordinary skill in the art to further modify the body of Speer so as to use a polyamide consisting of the group including nylon 6 or nylon 12 in view of JP (02-202928) in order to produce high temperature resistance, and good resistance to abrasion.

Response to the Claim Rejections - 35 U.S.C. § 103

5. Regarding the rejection of claims 1, 19 and 22 over the patent to McCutchan, Jr. in view of the patent to Avery, applicant submits that the present invention is directed to an idler pulley, which is defined as "a pulley that handles slack. A freely rotating pulley wheel that guides or takes up slack from a drive belt by pressing against it." (The American Heritage Dictionary of the English Language, New College Edition, Houghton Mifflin Co. (1976)). An idler pulley is also defined as "a pulley around which a belt, cable, or chain passes in changing direction of travel". It is essential that the idler pulley include a bearing member so that the idler pulley may freely rotate in either direction during use. Therefore, the idler pulley of the present invention is not fixed to a rotating shaft to operate various vehicle accessories. The pulleys described by

McCutchan, Jr. with the exception of embodiment 5 (Figs. 11 and 12) are not idler pulleys, but are drive pulleys. A drive pulley is defined as "A pulley mounted on the drive shaft that transmits power to the belt with which it makes contact (Portec Glossary of Terms). A driven pulley (roller) is defined as "any carrying roller (pulley) driven by belting, chain or other propelling medium (Portec Glossary of Terms). In a lone exception, McCutchan, Jr. teaches an idler pulley which includes a bearing assembly 81 and a metal hub 83. The metal hub 83 of McCutchan, Jr. appears to be similar to the tubular bearing insert of the present invention. However, in the present invention, the tubular bearing insert is directly adjacent the molded polymeric pulley body. In fact, the tubular bearing insert is integrally formed with the molded pulley body in the present invention. McCutchan, Jr., on the other hand, requires an annular metal body 86, which includes an annular web 87, which terminates at one end in a cylindrical axially extending annular flange 88, which telescopically mounts body 86 on hub 83. The web 87 terminates at the other end in an axially extending cylindrical wall 89. The other embodiments of McCutchan, Jr. are directed to drive pulleys, which are fixedly mounted to appropriate vehicle accessories. The examiner states that McCutchan, Jr. fails to disclose the coating comprises zinc that is fixedly attached to the insert.

With respect to claim 22, the examiner states that McCutchan, Jr. discloses the knurled section (30). Applicant submits that claim 22 is a dependent claim defining a preferred aspect of the present invention and, since it is believed that the present invention as defined by claims 1 and 19 is allowable, it is believed that dependent claim is also allowable.

Avery is cited as disclosing a pulley comprising a polymeric body and a metal part and a zinc alloy coating between the polymeric body and the metal part such that the polymeric body is molded to the zinc alloy in order to achieve great friction co-action and reduce rust between the rubber material and the metallic body. Actually, what Avery teaches is an alloy of copper, antimony and zinc (preferably containing approximately 62 ²/₃ % copper, 33 ¹/₃ % zinc and 3 and a fraction percent antimony to the rim of the pulley or the metal sleeve of the belt-engaging portion of the pulley. Therefore, Avery does not teach applying zinc to a hub and a pulley body.

Claim 19 has been canceled and the content thereof has been incorporated into independent claim 1. Applicant contends that the present invention is not obvious over either McCutchan, Jr. or Avery taken individually or in combination with each other. Accordingly, it is respectfully requested that this rejection of claims 1, 19 and 22 over McCutchan, Jr. in view of Avery be withdrawn.

6. Regarding the rejection of claims 1-5, 8, 13-14, 15-17 and 22 under 35 U.S.C. 103(a) as being unpatentable over Speer (4,366,609) in view of Avery (1,560,524), applicant contends that Speer does not teach an idler pulley, but instead teaches a drive pulley having a cup-shaped metal hub having a plurality of mounting holes for mounting the pulley for rotation. There is no mention of a bearing in the Speer patent. In view of the amendment to claim 1 wherein the bearing member of claim 19 has been incorporated into claim 1, it is believed that independent claim 1 is not obvious over the teaching of Speer. . Accordingly, it is respectfully requested that this rejection over Speer be withdrawn.

Claim 2 has been canceled.

Regarding the rejection of claim 3, Speer is cited as disclosing that the pulley body is manufactured from a moldable polymeric material, which is a phenolic resin. Since it is believed that independent claim 1 is now allowable, dependent claim 3 which defines a further limitation of claim 1 is also considered to be allowable.

Regarding the rejection of claims 4-5, Speer is cited as disclosing that the polymeric material can be a polyamide. Since it is believed that claim 1 is allowable, dependent claims 4-5 are also considered to be allowable.

Regarding the rejection of claims 13-14, in view of Avery? The examiner suggests that the metal coating (18) is coated before forming in an aluminum sleeve (46). Applicant submits

that the metal coating and the aluminum sleeve taught by Avery is on the belt facing section of the pulley and not between the hub and the pulley body. In any case, it is believed that independent claim 1 is now allowable and, since dependent claim 13-14 are simply further limitations of claim 1, such dependent claims 13-14 are also considered to be allowable. Accordingly, it is respectfully requested that this rejection over Speer in view of Avery be withdrawn.

7. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery as applied to claim 1 above, and further in view of JP (02-202928). The examiner states that Speer fails to disclose the type of polyamide is nylon, but that it is well known in the art that nylon is an organic base in polyamide that produces high resistance to temperature and good resistance to abrasion. JP (02-202928) is cited as disclosing that polyamides such as nylon 6 and nylon 12 are suitable because of their high melting point and highly crystalline structure. Applicant contends that claims 6-7 are dependent claims which further limit independent claim 1. Since it is believed that claim 1 is allowable, dependent claims 4-5 are also considered to be allowable. Accordingly is respectfully requested that this rejection be withdrawn.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery as applied to claim 1 and further in view of FR (1,595,346). Speer is cited as disclosing the use of high-density polyethylene and the use of fibrous glass, but fails to disclose an adhesion promoter selected from the group consisting of Talc and mica. FR (1,595,346) discloses that it is well known in the art to use Talc or mica as reinforcing adhesion promoters in moldable plastics to increase strength and produce good adhesion. Applicant contends that claim 8 is a dependent claims which further limits independent claim 1. Since it is believed that claim 1 is allowable, dependent claim 8 is also considered to be allowable. Accordingly it is respectfully requested that this rejection be withdrawn.

9. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCutchan, Jr. in view of Avery as applied to claim 1 above, and further in view of Hoffman et al. (4,046,432). The Examiner alleges that McCutchan, Jr. discloses the claimed invention except for the hub including means for locating the bearing member during assembly. Hoffman et al. disclose a bearing member (23) fitted within a central hub, wherein the hub includes a location means (37/47/57) which is a détente and is allowed to lock the rotational movement of the bearing, retaining relative axial movement and to facilitate proper alignment between the bearing and the hub. Applicant submits that claims 20-21 are dependent claims which further limit independent claim 1. Since claim 1 is believed to be allowable over the art, it is believed that dependent claims 20-21 are also allowable. Accordingly it is respectfully requested that this rejection be withdrawn.

10. Claim 23, as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery, Hoffman et al., McCutchan, Jr. and Arai (5,797,819). The examiner alleges that Speer discloses the claimed invention, but fails to disclose the zinc coating. Avery is cited as disclosing a pulley comprising a polymeric body, a metal part and a zinc alloy coating between the metal part and the polymeric body. Speer fails to disclose one or more bearing member locating means and a bearing member fitted in the hub. Hoffman is cited as disclosing the bearing member locating means. In addition, Speer fails to disclose the bearing member. McCutchan, Jr. is cited as disclosing a bearing member fitted in the hub. Furthermore, Speer fails to disclose the body containing silica. Arai is cited as disclosing a pulley body containing silica. Applicant submits that claim 23 is a dependent claim which further limits independent claim 1. Since claim 1 is believed to be allowable over the art, it is believed that dependent claim 23 is also allowable. Accordingly it is respectfully requested that this rejection be withdrawn.

As for claim 28, the examiner alleges that Speer discloses the claimed invention. Applicant submits that claim 28 is a dependent claim which further limits independent claim 1. Since claim 1 is believed to be allowable over the art, it is believed that dependent claim 28 is

also allowable. Accordingly it is respectfully requested that this rejection be withdrawn.

As for claim 29, the examiner alleges that Avery discloses the claimed invention. Applicant submits that claim 29 is a dependent claim which further limits independent claim 1. Since claim 1 is believed to be allowable over the art, it is believed that dependent claim 29 is also allowable. Accordingly it is respectfully requested that this rejection be withdrawn.

As for claim 30, the examiner alleges that Avery and Hoffman (and McCutchan, Jr.?) disclose the bearing member. Applicant submits that claim 30 is a dependent claim which further limits independent claim 1. Since claim 1 is believed to be allowable over the art, it is believed that dependent claim 30 is also allowable. Accordingly it is respectfully requested that this rejection be withdrawn.

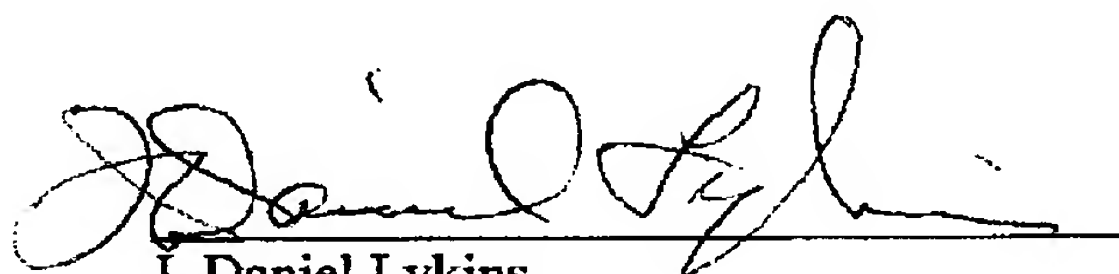
11. Claim 27, as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery, Hoffman and McCutchan, Jr. and Arai as applied to claim 23 above. and further in view of JP (02-202928). Speer fails to disclose the type of polyamide is nylon. JP (02-202928) is cited as disclosing that polyamides such as nylon 6 and nylon 12 are suitable because of their high melting points and highly crystalline structure. Applicant submits that claim 27 is a dependent claim which further limits independent claim 1. Since claim 1 is believed to be allowable over the art, it is believed that dependent claim 27 is also allowable. Accordingly it is respectfully requested that this rejection be withdrawn.

12. Claim 31, as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Speer in view of Avery, Hoffman and McCutchan, Jr. and Arai as applied to claim 23 above. and further in view of FR (5,797,819). Speer discloses the use of high-density polyethylene and the use of fibrous glass, but fails to disclose that one of the modifier, filler, and reinforcing agent and adhesion promoter is of a group consisting of Talc and mica. FR (5,797,819) discloses that it is well known in the art to use Talc or mica as reinforcing filler in moldable plastics so as to increase strength and produce good abrasion. The type of polyamide is nylon. JP is cited as

disclosing that polyamides such as nylon 6 and nylon 12 are suitable because of their high melting points and highly crystalline structure. Applicant submits that claim 27 is a dependent claim which further limits independent claim 1. Since claim 1 is believed to be allowable over the art, it is believed that dependent claim 27 is also allowable. Accordingly it is respectfully requested that this rejection be withdrawn. Applicant submits that claim 31 is a dependent claim which further limits independent claim 1. Since claim 1 is believed to be allowable over the art, it is believed that dependent claim 31 is also allowable. Accordingly it is respectfully requested that this rejection be withdrawn.

In view of the foregoing amendments and remarks, it is believed that this application is now in condition for allowance and an early indication thereof is earnestly solicited.

Respectfully submitted,



J. Daniel Lykins
Reg. No. 27,354

Dayco Products, LLC
1 Prestige Place
Miamisburg, Ohio 45342
Telephone No.: (937) 226-5725